Q1) a - Draw a system bus timing diagram required to execute the following
instructions by the microprocessor 8088 at maximum mode :

   1)   Test BL, [DI]

   2) NEG byte ptr [SI]

   b- write an assembly program in the form of procedures Using DOS
   interrupt (INT21h) that performs the following sub-procedures :
   - Read three decimal digits via keyboard continuously.
   - Display the string **"code has detected and lock has switched ON"**
     for 15secands, only If the entered decimal digits are equal **(02-04-08h),**Otherwise stop reading numbers after five attempts and display
     the following string "try again after 5 minute".
     Assume a system frequency equal 5MHZ.

Q-2) a - If the interrupt service routine(ISR) of the interrupt source (INT 40H) has
located at a logical address   (B500:EF08H). Write the instruction required
to initialize the interrupt vector table in order to handle this interrupt?

   b- The external interrupt source (NMI) has connected to the output of infra- red
   link. Whenever any person has cut this link, NMI has activated. Write assembly
   program that count the number of person passing through this link , once
   the number of persons exceeded over 500h an alarm message   "**the
   section is full**" the will display on screen and cleared every 2secnd in the
   center of the screen ?
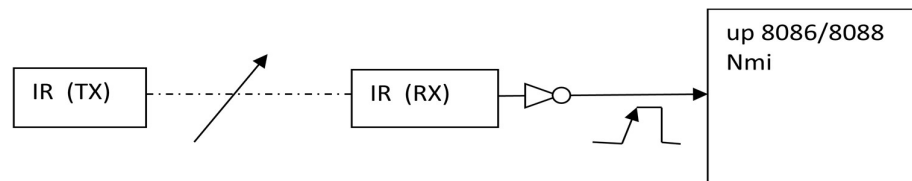
Q -3)   A 74LS138 decoder has its three SELECT inputs connected to A12 , A13 ,and A14 of
the system address bus. It has G2A connected to A15, G2B connected to Rd , and
G1 connected to +5V , A16-A19   has a value 'F'.
   - USE above information to determine what eight ROM address blocks (address
     range) the decoder output will select?
   - Why is RD used as one of the enable on a ROM decoder?
   - Draw the above system , assuming its interfaced to 8088 microprocessor?